

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 3 Resource name(s) or number (assigned by recorder) Wind Tunnel at N-216

P1. Other Identifier: NASA/Army Aerodynamics Lab and 7' X 10' Wind Tunnel #2

***P2. Location:** ☒ Not for Publication ☐ Unrestricted

***b. USGS 7.5' Quad** San Francisco North, Calif. **Date:** 1995

***c. Address** Warner Road

***e. Other Locational Data:**

***a. County** Santa Clara

City Moffett Field

Zip 94035

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

Building N-216 is associated with a 7' X 10' wind tunnel. A total of three accessory buildings are connected to the wind tunnel. N-216 is located mid-block, somewhat hidden from street view. The wind tunnel and two accessory buildings are located just northwest of N-216, along Warner Road. Both accessory buildings have exposed steel framing. The smaller of the two has a gable-roof and horizontal metal panels. The larger building is about three stories in height and has a large penthouse addition at the top. The wind tunnel connects to these two buildings on their east sides. A third structure, directly north of N-216 has a connection to the wind tunnel on both the west and east side. This building is steel framed (not exposed) and is sheathed with flat metal panels. It is 5,600 sq. ft.

This building appears to be in good condition.

***P3b. Resource Attributes:** (list attributes and codes) HP 39— Other: Wind Tunnel

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other

P5a. Photo



P5b. Photo: (view and date)
View of West Façade, (8/12/05)

***P6. Date Constructed/Age and Sources:** 1941

***P7. Owner and Address:**
United States of America as
represented by National Aeronautics
and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***P9. Date Recorded:** 08/11/05

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** None

***Attachments:** ☒ None ☐ Location Map ☐ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (list)

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 3

***NRHP Status Code 5D3**

*Resource Name or # Wind Tunnel at N-216

- B1. Historic name: 7-by-10-foot wint tunnel No. 2
 B2. Common name: Army Aerodynamics Lab/7x10 ft Wind Tunnel #2
 B3. Original Use: Wind tunnel and research facility B4. Present use: Wind tunnel and research facility
***B5. Architectural Style:** Moderne with 20th-Century Industrial influences
***B6. Construction History:** (Construction date, alterations, and date of alterations)
 1941 – Date of Construction; 1963 – Mezzanine added; Wind Tunnel has been altered several times over the building's lifetime.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:

***B8. Related Features:**

Significant architectural features include the concrete exterior, steel-sash windows, and concrete detailing.

B9a. Architect: National Advisory Committee for Aeronautics (NACA) Engineers

b. Builder:

***B10. Significance: Theme** Post-War Science and Space Exploration **Area** NASA Ames Research Center

| | | | | | |
|-------------------------------|-----------|----------------------|---------------------------------------|----------------------------|-------|
| Period of Significance | 1940-1952 | Property Type | Research Support Facility/Wind Tunnel | Applicable Criteria | 1 & 3 |
|-------------------------------|-----------|----------------------|---------------------------------------|----------------------------|-------|

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity)

Building N-216 is one of two 7x10 ft wind tunnels at the Ames Research Center (the other is in Building N-215). It currently houses closed circuit, low speed, and pressurized wind tunnels. It was one of several research and support buildings built between 1940 and 1958. Founded in 1939, the Ames Research Center was the second aeronautic research facility built for the National Advisory Committee for Aeronautics (NACA). This research center was vital in the development of the field of aeronautical research and science. Along with new research facilities, such as wind tunnels and testing facilities, several support buildings were constructed for the staff, including libraries, offices, manufacturing facilities, and laboratories. Patterned after a wind tunnel at the NASA Langley Research Center, this wind tunnel was invaluable during the war effort for the research conducted by the military. At this time, the research and support buildings at Ames were mostly rendered in an architectural vocabulary, which allowed for a variety of uses and a cohesive campus setting. These buildings were most often, one and two stories in height with concrete structural systems, unpainted concrete exteriors (with scored concrete detailing), and steel or wood-sash awning or hopper windows. They expressed Moderne architectural details with their scored exteriors, tripartite concrete panels (located between windows and doors), concrete entry canopies, and rectilinear configurations. Additionally, these buildings exhibited influences of 20th-Century Industrial architecture with their smooth, concrete exteriors and steel-sash awning and hopper windows. Today, the exterior of this building retains more historical significance than the interior, which has been altered over time. This building possesses integrity of location, design, setting, materials, workmanship, feeling, and association. It should be noted that the wind tunnel portion has been altered significantly over the building's lifetime. See Continuation Sheet for wind tunnel description.

B11. Additional Resource Attributes: (List attributes and codes) (HP11) -- Engineering Structure; (HP39) -- Wind Tunnel; (HP39) -- Research and Development Building

***B12. References (also see Continuation Sheets):**

- Lori Neff, *Department of Parks and Recreation – Historic Resources Inventory “Bldg. N216, Army Aerodynamics Lab/7 X 10 Ft. Wind Tunnel #2,”* (1995).
- Edwin Hartman, *Adventures in Research: A History of Ames Research Center, 1940 – 1965* (NASA SP-4302, 1970).
- Elizabeth A. Muenger, *Searching the Horizon: A History of Ames Research Center, 1940 – 1976* (NASA SP-4304, 1985).
- Glenn Burgos, *Atmosphere of Freedom: Sixty Years at the NASA Ames Research Center* (NASA SP-4314, 2000).

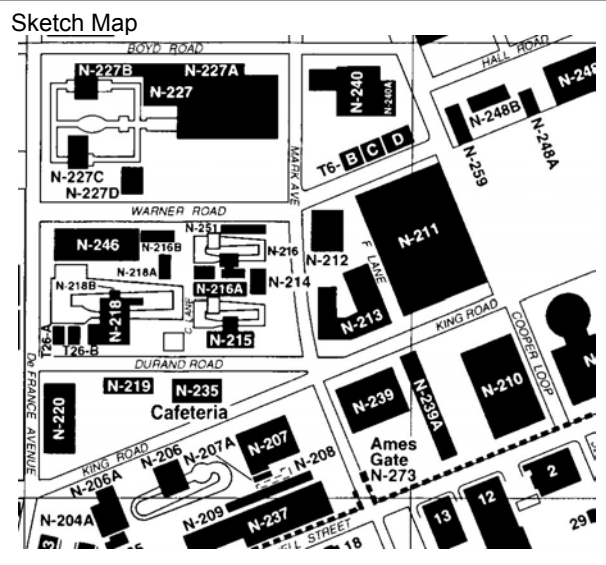
B13. Remarks:

In 1995, Section 110 survey documentation of the NASA Ames Research Center was submitted to the California State Historic Preservation Office (SHPO).

***B14. Evaluator:** Rich Sucré, Page & Turnbull, Inc.
724 Pine Street, San Francisco, CA 94108

***Date of Evaluation: 10/18/2005**

(This space reserved for official comments.)



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI # _____
Trinomial _____

Page 3 of 3

Resource Name or # Wind Tunnel at N-216

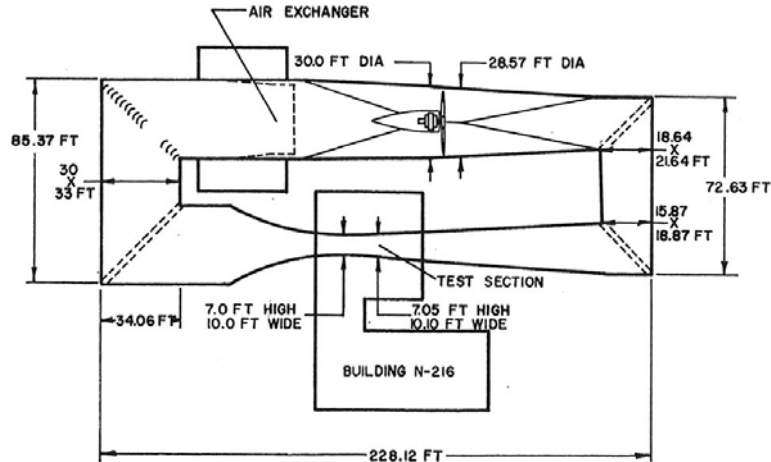
*Recorded by Rich Sucré, Page & Turnbull

*Date ☒ Continuation ☐ Update

***B12. References (cont'd):**

- National Aeronautics and Space Administration, *Technical Facilities Catalog*, Volume 1, publication NHB 8800.5A (1), October 1974.
- Technical Information Division, Ames Research Center, *Ames Research Facilities Summary*, 1974.
- Donald D. Baals and William R. Corliss, *Wind Tunnels of NASA*, NASA SP-440, 1981.

N 216



DESCRIPTION

The 7-ft x 10-ft wind tunnel is closed-circuit and atmospheric, with speeds continuously variable up to 220 knots. The tunnel is powered by a variable-speed 1800-hp motor driving a fixed-pitch fan. Model-mounting capabilities include single- or dual-strut mountings on an external balance, sting mounting using an internal balance, and 2-dimensional mounts across the 7-ft dimension. Automatic data acquisition equipment incorporating 576 active data channels plus the output of the external balance and suitable fixed digital inputs is located in the wind tunnel test chamber and is linked in an on-line communication with an IBM 1900 computer. Output data from the 1900 computer are returned to an on-line data plotter in the wind tunnel test chamber. Six-component measurements can be made for both the external balance mounting and the sting mounting. Three-component data are available from the 2-dimensional mounting. Data systems include scanivalve and strain gage conditioning equipment. Models incorporating propulsive units may be powered from either of 2 sources: a 100-kW, 400-cycle variable frequency drive is available to power a variety of model motors which are in the inventory; a 3000-psi air system is available to power pneumatic drives at flow rates up to 10 lb/sec at maximum pressure with delivery air temperatures from ambient to 600°F.

Other characteristics of the wind tunnel are as follows.

| | |
|---------------------------|--|
| Airstream Temperature: | Not controlled, depends on ambient air temperature (about 580°R, max) |
| Reynolds Number, per ft: | 2.3×10^6 , max |
| Stagnation Pressure, atm: | 1.0 |
| Test-Section Height, ft: | 7.0 |
| Test-Section Width, ft: | 10.0 |
| Test-Section Length, ft: | 15.0 |
| Test-Section Doors, ft: | Side Access: 6.3 high x 10.0 wide Overhead: 4.6 x 5.0 Personnel: 6.4 x 2.5 |

CURRENT STATUS

ACTIVE